

Name: Key

11.8 Extra Practice

Solve the following rational equations.

1) $\frac{4}{2x-1} = \frac{3}{x-6}$

$$4(x-6) = 3(2x-1)$$

$$4x - 24 = 6x - 3$$

$$-4x \quad -4x$$

$$-24 = 2x + 3$$

$$\frac{-21}{2} = x$$

$$\boxed{-\frac{21}{2} = x}$$

2) LCD: $3x$

$$3 \cdot \frac{3x-2}{x} = \frac{1}{3x}$$

$$9 + 2x = 1$$

$$-9 \quad -9$$

$$2x = -8$$

$$\boxed{x = -4}$$

3) LCD: $(x+8)(x-5)$

$$1 + \frac{x-1}{x+8} = \frac{-15}{x^2+3x-40}$$

$$\uparrow (x+8)(x-5)$$

$$(x+8)(x-5) + (x-1)(x-5) = -15$$

Don't re-invent the wheel

$$x^2+3x-40 + x^2-6x+5 = -15$$

$$2x^2-3x-35 = -15$$

slide + divide

$$2x^2-3x-20 = 0$$

$$(x-\frac{8}{2})(x+\frac{5}{2}) = 0$$

$$\boxed{4, -\frac{5}{2}}$$

6) $\frac{x-4}{3x+4} = \frac{-1}{x+3}$

$$(x+3)(x-4) = -1(3x+4)$$

$$x^2-x-12 = -3x-4$$

$$x^2+2x-8 = 0$$

$$(x+4)(x-2) = 0$$

$$\boxed{2, -4}$$

4) LCD: $(x+2)$

$$\frac{9}{x+2} = \frac{3}{x+2} + \frac{2x}{1}$$

$$9 = 3 + 2x(x+2)$$

$$9 = 3 + 2x^2 + 4x$$

$$0 = 2x^2 + 4x - 6$$

$$0 = 2(x^2 + 2x - 3)$$

$$0 = 2(x+3)(x-1)$$

$$\boxed{-3, 1}$$

5) LCD: $4x$

$$\frac{1}{4x} + \frac{x}{4} = \frac{1}{2}$$

$$1 + x^2 = 2x^2$$

$$0 = x^2 - 1$$

D.o.t.s.!

$$0 = (x-1)(x+1)$$

$$\boxed{\pm 1}$$